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A new species of *Agraphorura* (Collembola: Onychiuridae) from Southern Siberia

Новый вид рода *Agraphorura* (Collembola: Onychiuridae) из Южной Сибири

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KEY WORDS. Collembola, Onychiuridae, *Agraphorura sangelensis*, new species, mountain steppes, Russia.

КЛЮЧЕВЫЕ СЛОВА: Collembola, Onychiuridae, *Agraphorura sangelensis*, новый вид, горные степи, Россия.

ABSTRACT. A new *Agraphorura* species is described from Southern Siberia (Tuva, Russia). The new species, *A. sangelensis* **sp.n.**, is the most similar to *A. mariapetrae* (Thibaud, 1993) and *A. pseudojusti* (Thibaud & Massoud, 1980) found on Lesser Antilles. From both species, it can be distinguished by pseudocellar formula and a fewer number of granulated vesicles in PAO. Notes on taxonomic relationship and illustrations are given.

РЕЗЮМЕ. Описан новый вид рода *Agraphorura* из Южной Сибири (Тува, Россия), который наиболее близок к *A. mariapetrae* (Thibaud, 1993) и *A. pseudojusti* (Thibaud & Massoud, 1980), известных с Малых Антильских островов. Он отличается иной псевдоцеллярной формулой и меньшим числом гранулированных везикул в ПАО. Приведены систематические замечания и иллюстрации.

The genus *Agraphorura* Pomorski, 1998 from the tribe Thalassaphorurini with its 10–12 species [Pomorski, 2004; Arbea, 2005] combines very small onychiurid species, which are characterized by the absence of anal spines, the presence of d_0 seta on head, granulated vesicles in PAO, furcal finely granulated area with 2+2 setulae arranged in two rows, and by labial palp of AB type. The representatives of the genus are known from the majority of continents (Europe, Africa, South and North America). In the material from Tuva (Russia) we found the first Asiatic species of this genus. Its description is given below.

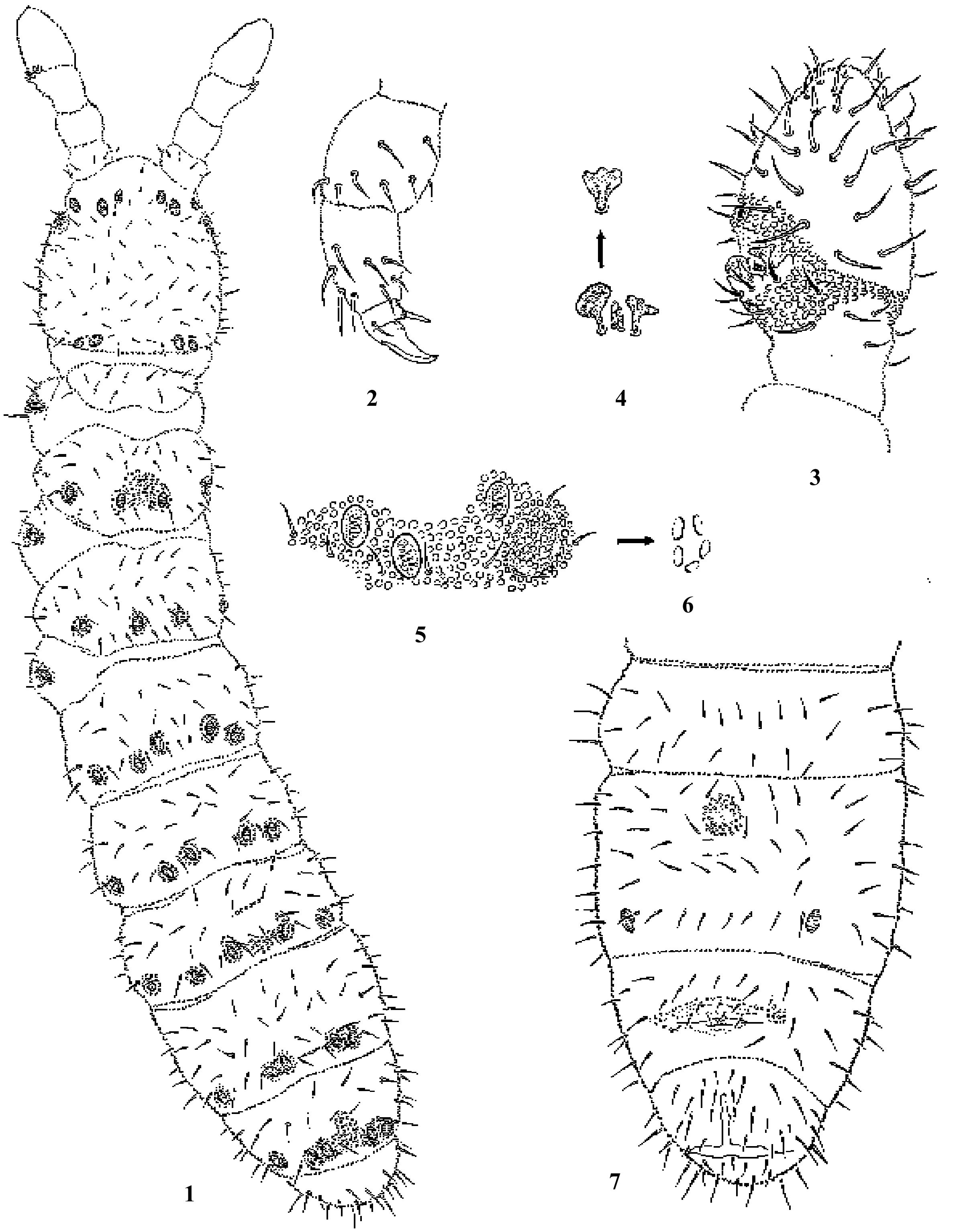
Agraphorura sangelensis Kaprus' et Stebaeva, **sp.n**
Figs 1–7.

Material. HOLOTYPE: reproductive male, Russia, SE Tuva, Sangelen Plateau, spurs of Khorumnug-Taiga Mt. Range, 8 km to Moren environs, 50°26' N, 90°27' E, 1200 m a.s.l., petrophytic mountain steppe, soil, 8.07.2000 leg S.K. Stebaeva. PARATYPES: 7 females and 1 male, the same place as holotype (3 females and 2 males are deposited in the collection of the State Museum of Natural History, L'viv, Ukraine; 4 females — in the collection of the Moscow Pedagogical State University, Russia).

Other materials: 1 subadult female, Russia, SE Tuva, Sangelen Plateau, Khorumnug-Taiga Mt. Range, ca 30 km NW of Erzin, Mandal Mt., right bank of the Bayan-Kol river, 1500 m a.s.l., mountain larch forest with *Larix sibirica*; 1 female and 2 males, the same place, 1200–1300 m a.s.l., meadow and true mountain steppes, soil, 4.09.1995 leg S.K. Stebaeva; 10 females and males, Russia, Tuva, Northern slope of East Tannu-Ola Mt. Range, 5–7 km S of Chagytai Lake, 50°55' N, 94°43'E, 1200–1500 m a.s.l., mountain larch forest with *Larix sibirica*, 17.06.2003 leg. S.K. Stebaeva.

Type locality. Russia, SE Tuva, Sangelen Plateau, spurs of Khorumnug-Taiga Mt. Range, 8 km to Moren environs, 50°26' N, 90°27' E, 1200 m a.s.l., petrophytic mountain steppe, soil.

DESCRIPTION. Color white. Length (without antennae) of reproductive males 0.35–0.43 mm and females 0.39–0.48 mm. Body shape cylindrical (Fig. 1). Granulation generally uniform and fine, antennal bases not marked. The head dorsally with d_0 seta present. Antennae nearly as long as head. Antennal segment IV with subapical organite and large microsensillum set in latero-external position at a level of posterior row of setae (Fig. 3). Antennal organ III with 4 guard setae, 4 short papillae, covering 2 sensory clubs, differing in shape and size, and 2 small sensory rods (Figs 3–4). Microsensillum inserted slightly below antennal organ III.



Figs 1–7. *Agraphorura sangelensis* **sp.n.**: 1 — habitus and dorsal chaetotaxy; 2 — tibiotarsus and claw of leg III; 3 — antennal segments III–IV; 4 — sensory clubs and sensory rods in antennal III sense organ; 5 — postantennal organ and anterior cephalic pseudocelli; 6 — arrangement of vesicles bases in postantennal organ; 7 — chaetotaxy of abdominal sterna III–VI.

Рис. 1–7. *Agraphorura sangelensis* **sp.n.**: 1 — общий вид и дорсальная хетотаксия; 2 — тибиотарзус и коготок 3-й пары ног; 3 — III–IV сегменты усика; 4 — сенсорные колбочки и сенсорные палочки антеннального органа; 5 — постантеннальный орган и передние ложные глазки головы; 6 — основание везикул постантеннального органа; 7 — хетотаксия III–VI брюшных стернитов.

Postantennal organ (PAO) small, ca. 1.3 times as long as nearest pseudocellum with 4–5 vesicles set closely and covered with numerous secondary bladders. As a whole PAO looks like a single unit (Figs 5–6).

Pseudocelli: dorsal 32/022/33333; ventral 1/000/0001; subcoxae 1/1/1.The shape of pseudocelli is unique: they are large and clearly elliptic. Parapseudocelli invisible. Labium of AB type. Thoracic terga II and III with lateral microsensilla. Dorsal chaetotaxy nearly symmetric, hardly differentiated into meso- and microsetae (Fig. 1). Sensilla distinct (Fig. 1). Sensillar formula: dorsal 2/011/111121, ventral 2/000/0001. Thoracic tergum I with 6+6 setae, abdominal terga IV and V without medial unpaired setae, abdominal tergum VI with one medial seta. Subcoxae with 3/3/3 setae. No setae on prosternum; meso- and metasternum with 1+1 and 1+1 setae respectively. Ventral tube with 2+2 basal and 6+6 latero-distal setae. Claw I–III without inner tooth. Empodial appendage blunt, shorter than inner edge of the claw, without basal lamella. Tibiotarsi I–III with 7 setae in distal whorl (Fig. 2). Male ventral organ absent. Furca reduced to small area of fine granulation located on abdominal sternum IV well below a border of abdominal sternum III, with 2+2 setulae arranged in two rows (Fig. 7). Anal spines absent.

TAXONOMIC REMARKS. The shape of furcal remnant, the presence of only 7 setae in distal tibiotarsal whorl, the lack of anal spines, and the presence of 4 guard setae in antennal organ III and d_0 seta on head show that the new species is a representative of the genus *Agraphorura*. Recently the genus *Sensillonychiurus* of the same tribe Thalassaphorurini was erected for species described on material from the Far East of Russia [Pomorski & Sveenkova, 2006]. According to J.Pomorski (pers. comm.), *Agraphorura* can be easily distinguished from *Sensillonychiurus* by the presence of d_0 seta on head (absent in *Sensillonychiurus*), labial palp of AB type (AC in *Sensillonychiurus*), 4–5 guard setae in AO (only 3 in *Sensillonychiurus*), and furcal area without contact with a border between abdominal sterna III–IV. All these features are typical for the new species and, despite general morphological similarity and closer distributional range of *A. sangelensis* **sp.n.** and Far East species of the genus *Sensillonychiurus*, the new species should be obviously placed in the genus *Agraphorura*. It can be also mentioned that some of the modern *Agraphorura* species need to be transferred to *Sensillonychiurus* in future.

Among known species *A. sangelensis* **sp.n.** is probably the most similar to *A. mariapetrae* (Thibaud, 1993) and *A. pseudojusti* (Thibaud & Massoud, 1980) from Guadeloupe Island (Lesser Antilles). All three species have four short papillae in AO, 5+5 or 6+6 setae on Th.I and pseudocelli on abdominal sterna and also characterized by the absence of medial unpaired dorsal setae on Abd.IV–V. They clearly differ having different numbers of pseudocelli (dorsally 32/022/33333 and ventrally 1/000/0001 in the new species; 32/133/33343 and 3/000/1212[1] respectively in *A. mariapetrae* and 32/133/33342 and 3/011/122? in *A. pseudojusti*) as well as the number of granulated vesicles in postantennal organ (4–5 in the new species, 9–11 in *A. pseudojusti,* 11–13 in *A. mariapetrae*).

ETYMOLOGY. The species was named after the Sangelen Plateau, the Mountain Massive of the SE Tuva.

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[1] In the original descriptions of *A. mariapetrae* and *A. pseudojusti* the authors gave different pseudocellar formulas for these species. Following preliminary key in web-site http://www.collembola.org we treat here the most lateral hind pseudocellum on head as ventral one.